

IN THE CLAIMS

Current Listing Of Claims:

We claim:

1. (Currently Amended) A process, comprising:

providing a substrate;

applying an anti-reflective coating comprising a ~~radiation path altering additive~~
polymer-based material containing a reflective material above the substrate;

applying a photoresist above the anti-reflective coating; and

patterning the photoresist with radiation.

2. (Cancelled)

3. (Cancelled)

4. (Currently Amended) The process of claim 1, wherein applying ~~an~~ the anti-reflective coating comprises applying a polymer-based material ~~containing~~ further comprising a core-shell material.

5. (Original) The process of claim 1, wherein patterning the photoresist with radiation comprises irradiating the photoresist with light having a wavelength selected from the group consisting of 365nm, 248nm, 193nm, 157nm, and 13.5nm.

6. (cancelled)

7. (Original) The process of claim 1, further comprising etching the substrate to form a first opening.

8. (Original) The process of claim 7, further comprising:

applying a sacrificial anti-reflective coating comprising a radiation path altering additive over the substrate and the first opening such that the first opening is filled with the sacrificial anti-reflective coating;

applying a photoresist over the sacrificial anti-reflective coating;

patterning the photoresist;

etching the substrate and the sacrificial anti-reflective material over the first opening to form a second opening; and

filling the first opening and the second opening with a metal.

9. (Cancelled)

10. (Cancelled)

11. (Currently Amended) The method of claim 9 4, wherein the ~~plurality of~~ core-shell ~~particles~~ material refracts and reflects light within the anti-reflective coating during the patterning of the photoresist with light.

12. (Original) A method, comprising:

applying a bottom anti-reflective coating comprising a polymer and a plurality of refractive polymer beads;

applying a photoresist above the anti-reflective coating;

patterning the photoresist;

etching the substrate to form a first opening.

applying a sacrificial anti-reflective coating comprising a spin-on-polymer and a plurality of refractive polymer beads over the substrate and the first opening such that the first opening is filled with the sacrificial anti-reflective coating;

applying a photoresist over the sacrificial anti-reflective coating;

patterning the photoresist;

etching the substrate and the sacrificial anti-reflective material over the first opening to form a second opening; and

filling the first opening and the second opening with a metal.

13. (Original) The method of claim 12, wherein the plurality of refractive polymer beads have a core-shell structure comprising an inorganic reflective core and an organic refractive shell.

14. (Original) The method of claim 12, wherein the plurality of refractive polymer beads have a core-shell structure comprising an absorbent core and an organic refractive shell.

15. (Cancelled)

16. (Cancelled)

17. (Cancelled)

18. (Currently Amended) An anti-reflective coating, comprising:
a base material; and
an additive to alter a radiation beam path comprising a reflective material.
19. (Currently Amended) The anti-reflective coating of claim 18, wherein the additive to alter the radiation beam path ~~is a reflective particle~~ further comprises a refractive material.
20. (Currently Amended) The anti-reflective coating of claim ~~19~~ 18, wherein the reflective ~~particle~~ material is selected from the group consisting of zinc oxide, titanium dioxide, calcium carbonate, diatomaceous earth, and zirconia.
21. (Canceled)
22. (Currently Amended) The anti-reflective coating of claim ~~18~~ 19, wherein the refractive ~~particle~~ material is a solid polymer shell.
23. (Original) The anti-reflective coating of claim 18, wherein the additive to alter the radiation beam path is a core-shell particle.
24. (Original) The anti-reflective coating of claim 18, wherein the base material comprises an inorganic material.
25. (Currently Amended) ~~The anti-reflective coating of claim 18, wherein the additive to alter the radiation beam path is a multi-layer mirror.~~

An antireflective coating, comprising:

a base material; and

a multi-layer mirror.

26. (Currently Amended) The anti-reflective coating of claim ~~48~~ 25, further comprising a surfactant to separate pigments.

27. (Currently Amended) The anti-reflective coating of claim ~~48~~ 25, wherein the anti-reflective coating is a bottom anti-reflective coating (BARC).

28. (Currently Amended) The anti-reflective coating of claim ~~48~~ 25, wherein the anti-reflective coating is a sacrificial anti-reflective coating.

29. (Currently Amended) The anti-reflective coating of claim ~~48~~ 25 ~~above~~, wherein the base material is a spin-on-glass (SOG).

30. (Currently Amended) The anti-reflective coating of claim ~~48~~ 25 ~~above~~, wherein the base material is a spin-on-polymer (SOP).